326 bracelets, necklaces, rings, long neck chains and chignon chains,
306 hairpins, buckles, buttons, earrings, etc., either of gold or of silver.

The purity of the metals used in this work varies widely, and is usually left to the choice of the person who commissions the work. In some cases gold is left free of any alloy, while often a fourth part of silver is used and sometimes even more.

Silver taken from coins is left as pure as it was originally, or else its purity is decreased by alloying it with copper and tin.

The precious stones used in jewelry include sapphires, rubies, quartz, crystal, onyx, glass and even basalts. Cutting facets on gems is unknown in Laos, and only cabochon cutting, which may be more or less regular, is practiced.

326 Ironmongery. The blacksmiths of Laos are quite skillful. Their extremely scant equipment includes a double-action bellows, one or two pairs of tongs, two or three hammers, a hot set and a small anvil. They use only wood charcoal.

By taking plenty of time they are nevertheless able, using bars of soft iron imported from Europe, deadheads, and "Duongs" which come from the high primitive furnaces [457] of the Koui region, to forge various tools and utensils such as machetes, swords, knives, scissors, spades, bits, elephant halters, carnac hooks, etc.

Each blacksmith has his own specialty. With the help of routinism and by virtue of constant repetition of the same forms, these artisans manage to acquire a real skill and to utilize every last scrap of iron. It should also be noted that iron is very expensive. It costs from 30 to 70 francs per hundred kilograms in Laos, and sometimes as much as 90 or even 110 francs.

A certain number of articles, such as plowshares, spade irons, axes, etc. are imported from China and Siam.

323 Pottery. The pottery industry is very active, and in spite
415 of the many imported pots made of wrought, enamel or cast iron or copper, the industry still makes a large number of pots and vases of every size and shape which are destined for various uses.

The potters of Laos produce glazed jars which serve as receptacles for alcohol and water, water coolers, flower vases, drinking mugs, oil lamps, cuspidors, smooth and rough mortars, tiles, brick, drains, ornamental modillions, etc. The products of this industry are mainly [439] destined for local consumption. Some of them, however, also find markets in nearby countries.

323 The potters' methods and equipment do not differ from those which are in widespread use everywhere.

The method of firing depends on the nature of the article, and firing may be done either in kilns dug out of the clay soil, in the banks of watercourses, or under stacks of rice straw. Wood or rice straw is used to fire the kilns.

In some regions articles are given a shiny black patina resembling graphite by firing them for a second time in paddy husks.

326 778 411 415 Brass-founding. One has only to explore the pagodas of Laos in order to realize that brass-founding used to be held in honor. Religious statues can be found which are sometimes of great [458] weight and usually of quite fine workmanship and taste, taking into account, to be sure, the quite special manner in which they conceive esthetics.

Although the crucibles have not been fired for many long years for casting such large pieces, the industry of brass-founding continues to be exercised by a certain number of specialists who are content with producing religious statuettes, necessities for betel, bells for elephants and livestock, various kinds of vases, cuspidors, etc.

This industry is an extremely ancient one in the land. It was certainly practiced during the Bronze Age, as is attested by the spear-heads, daggers, hatchets and halberds which have been found in northern Laos and which can now be seen in the Saint-Germain museum.

[821 172] It is interesting to note that the inhabitants of Laos attribute a meteoric origin to objects of the Bronze Age, as also to those of the Age of Polished Stone. They believe that these objects fall from the sky when it thunders, and that they are produced by lightning.

The following are some of the methods used by Laotian founders. Casting is always done by the lost wax process.

325 532 Casting statues. On an initial rough clay model, the artist applies a layer of fine, soft and well-pugged clay which he shapes in a more careful manner. Then after covering the statue, which is already much more than a rough draft, with a layer of bees-wax of the proper thickness, he finishes modeling the statue on the wax, inserting all the details and all the ornaments which it is to include. Polishing a bit here, engraving there, setting precious stones or simply glass between the eyelids to represent eyes, and inserting gold lips where the mouth is to be located, he gives the

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model the appearance which it will have when cast.

On this wax surface a very thin layer is first overlaid of clay which is finely pugged, well diluted with water and quite similar in appearance and consistency to the kaolin from which utensils of thin porcelain are molded. When this [459] [Illustration] [460] [Blank page] [461] first layer is dry, a second is applied which is made up of coarser clay, then a third which is still thicker. Finally, when the whole is no more than a mass which has the vague shape of the original model, a good thickness of fire clay which has been kneaded together with chopped straw, buffalo dung and paddy husks is applied by hand. The mold is then ready for pouring as soon as the outer layer dries.

At certain carefully chosen points in the less conspicuous parts of the model, wax plugs have been inserted at the correct angle through the different layers of clay so that they come out to the surface. Some of these will be vent holes to give passage to the vapors which will be emitted when the statue is cast, and the others are the spouts through which the molten metal will be poured from the crucibles.

The mold has been prepared in an excavation in the ground which is as deep as the statue is tall. When everything is ready, the excavation is filled with dry sand which is well tamped down. Finally the crucibles are arranged all around the mold, in greater or less numbers depending on the size of the object to be cast. Each of these has a bellows and sometimes two so as to be prepared for accidents, to hasten melting and to obtain perfect equality of fluidity and heat in the metal in all the crucibles.

When the time comes the metal is poured into all the spouts at once, and if the mold does not burst because of excess humidity, the bronze soon replaces the wax inside the walls of the mold. It is allowed to cool, then the mold is removed. If the operation is successful the statue then appears, smooth and pure and perfectly identical with the wax model. Only the junction points of the spouts and vent holes need any retouching, but the main parts usually come out admirably well.

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Casting various utensils. Small utensils are cast in just the same way, except that the crucible containing the molten metal is connected to the mold and packed in a common covering--a mixture of buffalo dung, chopped straw and paddy husks. Between the mold and the crucible two small lateral openings have been carefully made, the purpose of which is both to allow vapors to escape and to permit judging the degree of fusion of the metal.